REMARKS/ARGUMENT

Claims 1-6 are pending and have been examined. Claims 1-3, 5 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over Rich in view of Seki. Claim 4 was objected to as being dependent on a rejected base claim, but the Office Action notes that claim 4 would be allowable if rewritten in independent form. The Applicant would like to thank the Examiner for so noting, but respectfully defers rewriting claim 4 until after the Examiner has had an opportunity to consider our remarks as set forth below.

The Applicant has amended claims 1-6 to correct errors in English grammar and usage. The amendments have not resulting in a narrowing of the scope of the claim as previously written. Attached hereto is a marked-up version of the changes made to the claims by the current amendment.

Claims 1-3, 5 and 6 were rejected by the Office Action as being obvious over Rich in view of Seki. It is axiomatic that to establish a *prima facie* case of obviousness the Office Action must show that each and every limitation of the claims is met by the combined references.

Claims 1, 3 and 5 are independent claims. Each of claims 1 and 5 requires "a variable gain amplifier for comparing reception characteristics of reception signals received from the plurality of users prior to interference cancellation processing with reception characteristics upon the interference cancellation processing and evaluating a comparison

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result, and controlling gains prior to baseband decoding of the reception signals so as to maximize improvements of the reception characteristics." Claim 3 requires "a preliminary demodulation section for obtaining, in advance, the reception characteristics of the reception signals received from the plurality of users prior to the interference processing and notifying respective subsequent interference cancellation stages of the obtained data."

Rich fails to disclose or suggest the above-quoted limitations. The Office Action attempts to cure this deficiency using Seki. The Office Action states that Seki discloses a signal-to-interference power ratio measuring apparatus that would be combined with the CDMA receiving signal processor disclosed by Rich for the purpose of preparing signal-to-interference power ratio with the ratio indicative of the desired signal at the front end of the receiver to reduce power dissipation in the receiver while reducing the level of interference. However, this combination would not disclose Applicant's invention.

As discussed above, Rich fails to disclose comparing the reception characteristics of reception signals received from a plurality of users prior to interference cancellation processing with the reception characteristics after the interference cancellation processing. The addition of Seki does not cure this deficiency. In Seki, a signal-to-interference power ratio calculation section in a receiver is used to calculate an SIR value with a desired SIR value. A power control bit is then output which is then transmitted to a mobile station.

The transmission power control bit is demodulated and used to adjust the amplification used in the mobile station based on the decoded transmission power control bit.

In contrast, in Applicant's independent claims, the incoming signal is modified based on the base band level and the output of the interference canceller. Applicant does not claim any change in the transmitted power, only the received signal is modified. Thus, the combination of Rich and Seki fail to disclose Applicant's explicitly recited claims and said claims should be allowed.

Claim 6 depends from, and contain all the limitations of claim 5. This dependent claim also recite additional limitations which, in combination with the limitations of claim 5, are neither disclosed nor suggested by Rich and Seki and is also believed to be directed towards the patentable subject matter. Thus, claim 6 should also be allowed.

The Office Action further asserts that the demodulator 110 described in Rich is the equivalent of the preliminary demodulation section recited by claim 3 of the present application. The Applicant respectfully disagrees. There is nothing in Rich that either discloses or suggests that the demodulator 110 obtains, in advance, the reception characteristics of reception signals received from a plurality of users prior to interference processing, and notifies respective subsequent interference cancellation stages of the obtained data, as required by claim 3.

As the Applicant has respectfully pointed out, Rich is deficient as a reference with respect to the above-quoted limitations of claims 1, 3 and 5. Seki does not cure the deficiencies of Rich with respect to the above-quoted limitations, nor was Seki cited by the Office Action for that purpose. Rather, Seki was cited by the Office Action as teaching other limitations that the Office Action noted were missing in Rich. Regardless of whether or not Seki discloses these other limitations, the combination of Rich and Seki still fail to disclose the above-mentioned limitations of claims 1, 3, and 5.

For these reasons, the Applicant respectfully requests reconsideration of the rejection of claims 1, 3 and 5.

Claims 1, 3, and 5 are the sole independent claims pending in this application. Claims 2 and 6 are dependent on, and include all of the limitations of, claims 1 and 5 respectively. As a result, the Applicant respectfully requests reconsideration of the rejection of claims 2 and 6 for the same reasons as stated above.

Applicant has responded to all of the rejections and objections recited in the Office Action. Reconsideration and a Notice of Allowance for all of the pending claims are therefore respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is

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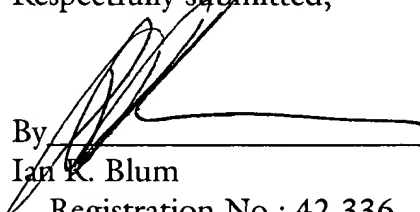respectfully requested to withdraw the outstanding rejection of the claims and to pass this

application to issue.

If the Examiner believes an interview would be of assistance, the Examiner is

welcome to contact the undersigned at the number listed below.

Dated: July 3, 2003   Respectfully submitted,

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APPENDIX A
Complete Set of Claims Pursuant to 37 CFR § 1.125

Claim 1.   (Currently Amended) A DS-CDMA (Direct Sequence-Code Division Multiple Access) multi-user interference canceller for ~~cancelling~~ canceling interference waves of a plurality of users, comprising a variable gain amplifier for comparing reception characteristics of reception signals received from the plurality of users prior to interference cancellation processing with reception characteristics upon the interference cancellation processing and evaluating a comparison result, and controlling gains prior to baseband decoding of the reception signals so as to maximize improvements of the reception characteristics of the reception signals on the basis of an evaluation result.

Claim 2.   (Currently Amended) ~~A~~ The canceller according to claim 1, wherein as the reception characteristics to be compared and evaluated, an SN (Signal-to-Noise) ratio or an Eb/No (energy per signal bit/noise power spectrum density) and/or a BER (Bit Error Rate) are used, and the SN ratio or Eb/No is controlled to be maximum, while the bit error rate is controlled to be minimum.

Claim 3.   (Currently Amended) A DS-CDMA multi-user interference canceller comprising:

   a variable gain amplifier whose gain can be controlled by a control signal;

   a preliminary demodulation section for obtaining, in advance, ~~the~~ reception characteristics of ~~the~~ reception signals received from ~~the~~ a plurality of users prior to ~~the~~ interference cancellation processing, and notifying respective subsequent interference cancellation stages of the obtained data;

   a section for measuring and obtaining the reception characteristics of the reception signals for the respective interference cancellation stages upon the interference cancellation processing;

a section for comparing the reception characteristics of the respective interference cancellation stages upon the interference cancellation processing with the reception characteristics prior to the interference cancellation processing; and

a reception quality collection section for collecting comparison results from all the interference cancellation stages when ~~the~~ an interference canceller determines that ~~the~~ a degree of improvement of the reception characteristics is low, and generating a control signal ~~is so generated as~~ to correct the current gain to ~~the~~ an AGC.

Claim 4.   (Currently Amended) ~~A~~ The canceller according to claim 3, wherein after said reception quality collection section collects the comparison results in all the interference cancellation stages, a gain of said variable gain amplifier ~~for demodulating the reception signal~~ is so controlled as to optimize an average result of the comparison results.

Claim 5.   (Amended)   A CDMA (Code Division Multiple Access) multi-user system for ~~cancelling~~ canceling interference waves of a plurality of users to obtain a plurality of demodulated signals, comprising comparing a variable gain amplifier for comparing reception characteristics of reception signals received from the plurality of users prior to interference cancellation processing with reception characteristics upon the interference cancellation processing and evaluating a comparison result, and controlling gains prior to baseband decoding of the reception signals so as to maximize improvements of the reception characteristics of the reception signals on the basis of an evaluation result.

Claim 6.   (Amended)   ~~A~~ The system according to claim 5, wherein an AGC controller generates a gain control signal for controlling ~~the~~ a gain of said variable gain amplifier, an SN (Signal-to-Noise) ratio or an Eb/No (energy per signal bit/noise power spectrum density) and/or a BER (Bit Error Rate) are used as the reception characteristics to be compared and evaluated, and the SN ratio or Eb/No is controlled to be maximum, while the bit error rate is controlled to be minimum.